Textbook Alignment to the Utah Core – 4th Grade Mathematics

This alignment has been completed using an "Independent Alignment Vendor" from the USOE approved list (www.schools.utah.gov/curr/imc/indvendor.html.) ***Yes*** ✓ ***No*** _____

Name of Company and Individual Conducting Alignment: Standard Media Services, LLC: David A. Johnson

A "Credential Sheet" has been completed on the above company/evaluator and is (Please check one of the following):

✓ **On record with the USOE.**

☐ **The "Credential Sheet" is attached to this alignment.**

Instructional Materials Evaluation Criteria (name and grade of the core document used to align): 4th Grade Mathematics Core Curriculum

Title: *Houghton Mifflin Math ©2007: Grade 4* **ISBN#:** 0-618-59094-0

Publisher: Houghton Mifflin Company

Overall percentage of coverage in the *Student Edition (SE) and Teacher Edition (TE)* of the Utah State Core Curriculum: 97 %

Overall percentage of coverage in *ancillary materials* of the Utah Core Curriculum: _____%

STANDARD I: Students will acquire number sense and perform operations with whole numbers, simple fractions, and decimals.

Percentage of coverage in the *student and teacher edition* for Standard I: 100 %	**Percentage of coverage not in student or teacher edition, but covered in the *ancillary material* for Standard I: _____%**		
OBJECTIVES & INDICATORS	**Coverage in *Student Edition(SE) and Teacher Edition (TE)* (pg #'s, etc.)**	**Coverage in *Ancillary Material* (titles, pg #'s, etc.)**	***Not covered in TE, SE or ancillaries*** ✓

Objective 1.1: Demonstrate multiple ways to represent whole numbers and decimals, from hundredths to one million, and fractions.				
a.	Read and write numbers in standard and expanded form.	SE/TE: 1b-1c, 3, 6-9, 16-18, 20, 21, 542-543, 544-545, 546-549, 565		
b.	Demonstrate multiple ways to represent whole numbers and decimals by using models and symbolic representations (e.g., 36 is the same as the square of six, three dozen, or 9 x 4).	SE/TE: 6-7, 14-15, 16-17, 19, 24, 26, 30-32, 33, 60-61, 69, 84, 88, 92, 94-95, 98-99, 110, 150-153. 206-207, 208, 214, 276-278, 542-543,544, 546-549, 550-551, 553, 558		
c.	Identify the place and the value of a given digit in a six-digit numeral, including decimals to hundredths, and round to the nearest tenth.	SE/TE: 6-9, 14-15, 16-18, 19, 20, 21, 542-543, 548, 549, 564, 567, 568-569 TE: 1B-1C, 22C-22D, 142C		
d.	Divide regions, lengths, and sets of objects into equal parts using a variety of models and illustrations.	SE/TE: 486-487, 489, 490-491, 492-493, 494, 498-500, 501, 502, 504 TE: 56C, 486B-486C, 488D		
e.	Name and write a fraction to represent a portion of a unit whole, length, or set for halves, thirds, fourths, fifths, sixths, eighths, and tenths.	SE/TE: 489, 490-491, 501, 502-503, 547 TE: 486B-486C		
f.	Identify and represent square numbers using models and symbols.	SE/TE: 90, 105, 142		
Objective 1.2: Analyze relationships among whole numbers, commonly used fractions, and decimals to hundredths.				
a.	Compare the relative size of numbers (e.g., 475 is comparable to 500; 475 is small compared to 10,000 but large compared to 98).	SE/TE: decimals—558-559, 560-563, 564, 565; fractions—498-500, 512, 513; money—30-32; whole numbers—24-25, 28, 33, 44, 45 TE: 486B-486C		
b.	Order whole numbers up to six digits, simple fractions, and	SE/TE: decimals—558-559, 560-		

	decimals using a variety of methods (e.g., number line, fraction pieces) and use the symbols <, >, and = to record the relationships.	562, 565; fractions—498-500, 513; money amounts—31-32, whole numbers—26-28, 33, 44, 45 TE: 486B-486C		
c.	Identify a number that is between two given numbers (e.g., 3.2 is between 3 and 4; find a number between 0.1 and 0.2).	SE/TE: 24, 26, 38-39, 92, 366-369, 499, 510, 550, 558, 560, 569, 599 TE: 64A		
d.	Identify equivalences between fractions and decimals by connecting models to symbols.	SE/TE: 541, 542-543, 544-545, 546-549, 550-552, 560-561, 563, 564, 565		
e.	Generate equivalent fractions and simplify fractions using models, pictures, and symbols.	SE/TE: 492-493, 494-496, 501, 512, 513, 541 TE: 486C		
Objective 1.3: Model and illustrate meanings of multiplication and division of whole numbers and the addition and subtraction of fractions.				
a.	Model multiplication (e.g., equal-sized groups, rectangular arrays, area models, equal intervals on the number line), place value, and properties of operations to represent multiplication of a one- or two-digit factor by a two-digit factor and connect the representation to an algorithm.	SE/TE: 6-7, 14-15, 16, 19, 26, 38, 83, 84-85, 90-91, 92, 94, 98-99, 142-143, 145, 88-89, 150-151, 152-154, 160-163, 172-173, 176-177, 178, 184, 252-253 TE: 142C, 170C-170D		
b.	Use rectangular arrays to interpret factoring (e.g., find all rectangular arrays of 36 tiles and relate the dimensions of the arrays to factors of 36).	SE/TE: 94, 95, 142-143, 145, 202, 251, 255 TE: 88A		
c.	Demonstrate the mathematical relationship between multiplication and division (e.g., 3 x □ = 12 is the same as 12 ÷ 3 = □ and □ = 4) and use that relationship to explain that division by zero is not possible.	SE/TE: relate multiplication to division—88-89, 90-91, 92, 95, 96, 99; division by zero—84-87 TE: 202C		
d.	Represent division of a three-digit dividend by a one-digit divisor, including whole number remainders, using a variety of methods (e.g., rectangular arrays, manipulatives, pictures),	SE/TE: 218-219, 220-222, 224, 225, 227, 228-229, 230-233, 237, 238-239, 248, 249		

	and connect the representation to an algorithm.			
e.	Use models to add and subtract simple fractions where one single-digit denominator is 1, 2, or 3 times the other (e.g., 2/4 + 1/4; 3/4 - 1/8).	SE/TE: 516-519, 524-525, 527, 528-529, 530-532, 538		
Objective 1.4: Solve problems involving multiplication and division of whole numbers and addition and subtraction of simple fractions and decimals.				
a.	Use estimation, mental math, paper and pencil, and calculators to perform mathematical calculations and identify when to use each one appropriately.	SE/TE: estimation—clustering: 67; exercises: 32, 161, 284, 321, 324, 328, 438; front-end: 67; rounding: 38, 64-66, 76-78, 148-149, 160-161, 164-166, 174-175, 186-187, 527, 570-571; mental math—41, 61, 62-63, 146-147, 172-173, 209, 218-219, 242, 245, 266, 424, 471, 500, 562, 575; choose a computation method—12, 42, 78, 124, 158, 166, 188, 212, 222, 242, 246, 260, 266, 342, 350, 362, 420, 438, 446, 472, 506, 526, 578, 606, 630		
b.	Select appropriate methods to solve a single operation problem and estimate computational results or calculate them directly, depending on the context and numbers involved in a problem.	SE/TE: 10-12, 38, 42, 64-66, 67, 76-78, 122-124, 148-149, 156-158, 160-161, 164-166, 174-175, 186-187, 188, 212, 240-242, 246, 258-260, 340-342, 350, 360-362, 370, 436-438, 446, 504-506, 527, 536, 554-556, 570-571, 604-606 TE: 142C		
c.	Write a story problem that relates to a given multiplication or division equation, and select and write a number sentence to solve a problem related to the environment.	SE/TE: 121, 127, 158, 166, 211, 222, 241, 246, 265, 295, 523		

d.	Solve problems involving simple fractions and interpret the meaning of the solution (e.g., A pie has been divided into six pieces and one piece is already gone. How much of the whole pie is there when Mary comes in? If Mary takes two pieces, how much of the whole pie has she taken? How much of the pie is left?)	SE/TE: 488, 490-491, 494, 496, 498, 500, 502-503, 504-506, 512		
Objective 1.5: Compute problems involving multiplication and division of whole numbers and addition and subtraction of simple fractions and decimals.				
a.	Demonstrate quick recall of basic multiplication and division facts.	SE/TE: 83, 84-87, 88-89, 92-93, 94-97, 98-99, 106, 107, 109		
b.	Multiply up to a three- digit factor by a two-digit factor with fluency, using efficient procedures.	SE/TE: 171, 172-173, 174-175, 176-177, 178-181, 182-183, 184-185, 190, 191, 196-197		
c.	Divide up to a three-digit dividend by a one-digit divisor with fluency, using efficient procedures.	SE/TE: 218-219, 220-221, 224, 225, 227, 228-229, 230-232, 237238-239, 248, 249		
d.	Add and subtract decimals and simple fractions where one single-digit denominator is 1, 2, or 3 times the other (e.g., 2/4 + 1/4 = 3/4; 1/3 – 1/6 = 1/6).	SE/TE: add decimals—570-571, 572-573, 574-575, 576-578, 580, 581; add fractions—516-519, 520-521, 524-525, 528-529, 538, 539		
STANDARD II: Students will use patterns and relations to represent mathematical problems and number relationships.				
Percentage of coverage in the *student and teacher edition* for Standard II: 93 %		**Percentage of coverage not in student or teacher edition, but covered in the *ancillary material* for Standard II: _____%**		
OBJECTIVES & INDICATORS		**Coverage in *Student Edition(SE) and Teacher Edition (TE)* (pg #'s, etc.)**	**Coverage in *Ancillary Material* (titles, pg #'s, etc.)**	***Not covered in TE, SE or ancillaries*** ✓
Objective 2.1: Identify, analyze, and determine rules for describing numerical patterns involving operations and nonnumerical growing patterns.				

a.	Analyze growing patterns using objects, pictures, numbers, and tables to determine a rule for the pattern.	SE/TE: 73, 258, 419, 554-556		
b.	Recognize, represent, and extend simple patterns involving multiples and other number patterns (e.g., square numbers) using objects, pictures, numbers, and tables.	SE/TE: 69, 73, 90-91, 98-99, 172-173, 146-147, 218-219, 272-273, 418-420, 463, 476-477 TE: 90A, 108D, 202C		
c.	Identify simple relationships in real-life contexts and use mathematical operations to describe the pattern (e.g., the number of legs on a given number of chairs may be determined by counting by fours or by multiplying the number of chairs by 4).	SE/TE: 258-260, 418-420, 554-556 TE: 56C		
Objective 2.2: Use algebraic expressions, symbols, and properties of the operations to represent, simplify, and solve mathematical equations and inequalities.				
a.	Use the order of operations to evaluate, simplify, and compare mathematical expressions involving the four operations, parentheses, and the symbols <, >, and = (e.g., 2 x (4 - 1) + 3; of the two quantities 7 - (3 - 2) or (7 - 3) - 2, which is greater?).	SE/TE: 24-25, 66, 78, 86, 110-111, 116-117, 166, 173, 281, 559, 561, 626 TE: 108C		
b.	Express single-operation problem situations as equations and solve the equation.	SE/TE: 116-117, 118-121, 122-123 TE: 122A		
c.	Recognize that a symbol represents the same number throughout an equation or expression (e.g., $\Delta + \Delta = 8$; thus, $\Delta = 4$).	*See related content— SE/TE: 145, 154, 179, 202; variables: 118-121, 122-123, 222 TE: 108D		
d.	Describe and use the commutative, associative, distributive, and identity properties of addition and multiplication, and the zero property of multiplication.	SE/TE: commutative, associative—60-61, 84-87, 100-101, 178-179; distributive—176-177, 178-179; identify—84-86; zero—60-61, 84-		

		87		
STANDARD III: Students will understand attributes and properties of plane geometric objects and spatial relationships.				
Percentage of coverage in the *student and teacher edition* for Standard III: 90 %		**Percentage of coverage not in student or teacher edition, but covered in the *ancillary material* for Standard III: _____%**		
OBJECTIVES & INDICATORS		**Coverage in *Student Edition(SE) and Teacher Edition (TE)* (pg #'s, etc.)**	**Coverage in *Ancillary Material* (titles, pg #'s, etc.)**	***Not covered in TE, SE or ancillaries*** ✓
Objective 3.1: Identify and describe attributes of two-dimensional geometric shapes.				
a.	Name and describe lines that are parallel, perpendicular, and intersecting.	SE/TE: 405-406, 415, 426, 427		
b.	Identify and describe right, acute, obtuse, and straight angles.	SE/TE: 408-409, 410-411, 415, 426, 427		
c.	Identify and describe the radius and diameter of a circle.	SE/TE: 422-425, 426, 427		
d.	Identify and describe figures that have line symmetry and rotational symmetry.	SE/TE: 440-443, 448, 449 TE: 428D		
Objective 3.2: Specify locations using grids and maps.				
a.	Locate coordinates in the first quadrant of a coordinate grid.	SE/TE: 614, 616-617, 623, 627, 633, 635, 636, 641, 685 TE: 592B-592C, 614D		
b.	Give the coordinates in the first quadrant of a coordinate grid.	SE/TE: 614, 616-617, 623, 627, 628-629, 635, 636, 641, 685 TE: 592B-592C, 614D		
c.	Locate regions on a map of Utah.	*See related content— SE/TE: 166, 391, 395, 584, 614, 616, 623, 627 TE: 1B, 2D, 270D		
d.	Give the regions of a position on a map of Utah.	*See related content— SE/TE: SE/TE: 166, 391, 395, 584,		

		614, 616, 623, 627 TE: 1B, 2D, 270D		
Objective 3.3: Visualize and identify geometric shapes after applying transformations.				
a.	Identify a translation, rotation, or a reflection of a geometric shape.	SE/TE: 434-435, 438, 440, 443, 447, 448, 449, 636, 682, 683, 684 TE: 428D		
b.	Recognize that 90°, 180°, 270°, and 360° are associated, respectively, with 1/4, 1/2, 3/4, and full turns.	SE/TE: 440, 683		
STANDARD IV: Students will describe relationships among units of measure, use appropriate measurement tools, and use formulas to find area measurements.				
Percentage of coverage in the *student and teacher edition* for Standard IV: 100 %		**Percentage of coverage not in student or teacher edition, but covered in the *ancillary material* for Standard IV: _____%**		
OBJECTIVES & INDICATORS		**Coverage in *Student Edition(SE) and Teacher Edition (TE)* (pg #'s, etc.)**	**Coverage in *Ancillary Material* (titles, pg #'s, etc.)**	***Not covered in TE, SE or ancillaries*** ✓
Objective 4.1: Describe relationships among units of measure for length, capacity, and weight, and determine measurements of angles using appropriate tools.				
a.	Describe the relative size among metric units of length (i.e., millimeter, centimeter, meter), between metric units of capacity (i.e., milliliter, liter), and between metric units of weight (i.e., gram, kilogram).	SE/TE: metric units of length—318-319, 320-321, 325, 330, 331; capacity—322-323, 330, 331; mass—302, 326-328, 331 TE: 304D		
b.	Describe the relative size among customary units of capacity (i.e., cup, pint, quart, gallon).	SE/TE: 310-311, 330, 331		
c.	Estimate and measure capacity using milliliters, liters, cups, pints, quarts, and gallons, and measure weight using grams and kilograms.	SE/TE: capacity—310-311, 322-323; mass—302, 326-328; weight—312-314		

d.	Recognize that angles are measured in degrees and develop benchmark angles (e.g., 45°, 60°, 120°) using 90° angles to estimate angle measurement.	SE/TE: 410-411		
e.	Measure angles using a protractor or angle ruler.	SE/TE: 410-411		
Objective 4.2: Recognize and describe area as a measurable attribute of two-dimensional shapes and calculate area measurements.				
a.	Quantify area by finding the total number of same-sized units of area needed to fill the region without gaps or overlaps.	SE/TE: 452-453 TE: 450D		
b.	Recognize that a square that is 1 unit on a side is the standard unit for measuring area.	SE/TE: 452-453 TE: 450D		
c.	Develop the area formula for a rectangle and connect it with the area model for multiplication.	SE/TE: 456-459 TE: 450D		
d.	Develop and use the area formula for a right triangle by comparing with the formula for a rectangle (e.g., two of the same right triangles makes a rectangle).	SE/TE: 459		
e.	Develop, use, and justify the relationships among area formulas of triangles and parallelograms by decomposing and comparing with areas of right triangles and rectangles.	SE/TE: 459, 460-462		
f.	Determine possible perimeters, in whole units, for a rectangle with a fixed area, and determine possible areas when given a rectangle with a fixed perimeter.	SE/TE: 452-453, 454-455, 459 TE: 400C, 450D		
STANDARD V: Students will interpret and organize collected data to make predictions, answer questions, and describe basic concepts of probability.				

Percentage of coverage in the *student and teacher edition* for Standard V: 93 %		**Percentage of coverage not in student or teacher edition, but covered in the *ancillary material* for Standard V: _____%**		
OBJECTIVES & INDICATORS		**Coverage in *Student Edition(SE) and Teacher Edition (TE)* (pg #'s, etc.)**	**Coverage in *Ancillary Material* (titles, pg #'s, etc.)**	***Not covered in TE, SE or ancillaries*** ✓
Objective 5.1: Collect, organize, and display data to answer questions.				
a.	Identify a question that can be answered by collecting data.	SE/TE: B1, 12, 355, 356-358 TE: 354D		
b.	Collect, read, and interpret data from tables, graphs, charts, surveys, and observations.	SE/TE: B1, 3, 6, 8, 10, 14, 15, 16, 18, 19, 22, 25, 29, 36, 40-41, 44, 47, 51, 53, 66, 68, 71, 75, 96, 180, 188, 216, 260, 270, 342, 354, 355, 356-358, 362, 375, 376-377, 378-379, 380-382, 384-386, 387, 389, 393, 420, 424, 438, 506, 534-535, 562, 603, 628-629; graphs—12, 22, 24, 26, 38-39, 40-41, 44, 51, 53, 92, 170, 180, 188, 232, 260, 270, 284, 342, 362, 366-368, 369, 370-371, 372-373, 374, 375, 377, 378-379, 380-381, 382-383, 384-386, 387, 388, 389, 392, 394, 421, 424, 438, 439, 494, 499, 506, 538, 560, 562, 568-569, 594, 599, 603, 606, 620, 622, 623, 624-625, 628-629, 632, 635, 636, 637, 641, 673, 675, 678, 681; charts—3, 6, 7, 10, 14, 15, 16, 19, 29, 33, 53, 66, 155, 222, 298, 299, 304, 514, 546, 547, 553, 556, 557, 560, 572 ; tables—8, 18, 25, 36, 47, 68, 71, 75, 90-91, 96, 97, 98-99, 101, 105, 108, 109, 125, 126-		

		127, 130, 131, 133, 139, 144, 158, 162, 184, 189, 193, 197, 199, 204, 207, 216, 226, 231, 236, 242, 246, 250, 252-253, 266, 269, 293, 297, 309, 321, 346, 360, 364-365, 368, 376, 377, 382-383, 393, 402, 462, 483, 500, 510, 519, 521, 525, 536, 540, 548, 554, 566, 578, 584, 589, 607, 615, 619, 620, 626, 630, 632, 633, 635, 639; surveys—B1, 354, 355, 356-357, 358, 369, 597; observations—B5, 14, 318-319, 322, 340, 351, 393, 452, 466, 493, 602, 611 TE: 56B, 108D, 142B,		
c.	Represent data using frequency tables, bar graphs, line plots, and stem and leaf plots.	SE/TE: frequency tables—356-358; bar graphs—40-41, 180, 216, 270, 342, 362, 375, 376-377, 420, 438, 506, 562, 603, 673; line plots—12, 366-368, 606, 678; stem-and-leaf plots—370-372, 684		
d.	Identify and distinguish between clusters and outliers of a data set.	SE/TE: 370-371, 680 *Clusters represented but not defined until p. 194 of the Gr. 5 textbook.		
Objective 5.2: Describe and predict simple random outcomes.				
a.	Describe the results of experiments involving random outcomes as simple ratios (e.g., 4 out of 9, 4/9).	SE/TE: 592, 598-600, 608-610, 613		
b.	Conduct simple probability experiments, with and without replacement, record possible outcomes systematically, and display results in an organized way.	SE/TE: 601, 602-603, 610, 611 TE: 594D		

c.	Use the results of simple probability experiments, with and without replacement, to describe the likelihood of a specific outcome in the future.	SE/TE: 592-593, 594, 595, 596-597, 598, 601, 602-603, 610, 611, 612, 613		